

Title (en)

METHOD AND APPARATUS FOR CONDUCTING MASS TRANSFER PROCESSES

Title (de)

VERFAHREN UND VORRICHTUNG ZUR DURCHFÜHRUNG VON MASSENTRANSFERPROZESSEN

Title (fr)

PROCÉDÉ POUR EFFECTUER DES PROCESSUS D'ÉCHANGE DE MASSE ET APPAREIL POUR SA MISE EN UVRE

Publication

EP 2581134 A1 20130417 (EN)

Application

EP 11790072 A 20110531

Priority

- RU 2010122560 A 20100603
- RU 2011000377 W 20110531

Abstract (en)

Inventions relate to the means of mass transfer sorption processes of component separation of aqueous solutions of inorganic substances. The method of mass transfer sorption processes comprises passage of a processed aqueous solution through a layer of granulated sorbent. The particular feature of the method is the fact that this layer is pre-filled with an organic liquid (1) immiscible with either water or an aqueous solution under treatment, and helps to prevent fluidization of the sorbent (2) in the said layer. The apparatus for mass transfer of sorption processes is a vertical tank (29) with inlet and outlet fittings (33,34), which is loaded with a layer of sorbent (36) disposed between the upper and the lower distribution and drainage systems (38, 37). The characteristic property of the apparatus is that the layer of sorbent is filled up with the said liquid. The industrial plant for separation of the components of aqueous solutions of inorganic sub-stances includes the said apparatus (112) and the apparatus for the separation of organic liquids from aqueous solutions. The latter has a casing with three chambers, the middle one of which is separated from the first outer one by a grid and from the other by a hydrophobic drainage layer. The emulsion to be separated is introduced into the middle chamber, and the separation results are derived from the outer chambers. In case of the specified coverage of the sorbent layer the processed solution is introduced at the interphase border between the organic liquid (I) and the surface of the sorbent granules (2), forming a thin film (3) coating the granules. As a result, the contact surface of the solution and the sorbent significantly expands and the efficiency of the process increases.

IPC 8 full level

B01J 47/00 (2006.01); **B01D 12/00** (2006.01); **B01D 15/00** (2006.01); **B01D 24/16** (2006.01); **B01D 37/00** (2006.01); **B01J 8/02** (2006.01); **B01J 20/28** (2006.01); **B01J 47/02** (2006.01); **C02F 1/28** (2006.01); **C02F 101/10** (2006.01); **C02F 101/30** (2006.01)

CPC (source: EP US)

B01D 11/0219 (2013.01 - EP US); **B01D 12/00** (2013.01 - US); **B01D 15/00** (2013.01 - EP US); **B01J 8/025** (2013.01 - EP US); **B01J 8/0278** (2013.01 - EP US); **B01J 20/28052** (2013.01 - EP US); **B01J 39/05** (2017.01 - EP US); **B01J 41/05** (2017.01 - EP US); **B01J 47/022** (2013.01 - EP US); **B01J 49/07** (2017.01 - EP US); **C02F 1/288** (2013.01 - EP US)

Cited by

CN114222624A

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

EP 2581134 A1 20130417; **EP 2581134 A4 20140305**; EA 023118 B1 20160429; EA 201201470 A1 20130530; RU 2434679 C1 20111127; US 2013146543 A1 20130613; US 8940175 B2 20150127; WO 2011152762 A1 20111208

DOCDB simple family (application)

EP 11790072 A 20110531; EA 201201470 A 20110531; RU 2010122560 A 20100603; RU 2011000377 W 20110531; US 201213686117 A 20121127